

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-10 and 14-16, in the reply filed on 08/24/2009 is acknowledged. Claims 11-13 and 17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention(s).

### ***Claim Rejections - 35 USC § 112***

2. Claims 1, 3-10, and 14-16, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 1 recites the limitation "anatase phase in a proportion of 70-100%", which is unclear as to what constitutes "in a proportion of 70-100%", e.g. relative to what other component/composition, by weight, etc.
- Claims 4-5 and 8 each recites the limitation "largely assuming the anatase phase", which is unclear as to what is meant by "largely assuming".
- Claim 10 recites "along and the remaining length or surface of said portion comprises constituting a part directed away from the implant can be substantially amorphous, rutile, or in the anatase phase, and the length section ...", which is incoherent. It is unclear what is meant by "along and...", "said portion comprises constituting...", "the length section". Also note that "the remaining length" lacks antecedent basis.
- Claim 16 recites the limitation "the bone stimulation substance", which lacks antecedent basis. Also the acronym "BMP" is not appropriate.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 3-10, and 14-15, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sul et al. (article: Resonance frequency and removal torque analysis of implants with turned and anodized surface oxides, *Clinical Oral Implants Research*, 13, 2002; 252-259).**

Regarding claim 1, Sul et al. disclose various implants, each as an experimental group having a range of surface morphology (abstract). Each implant is capable of extending at least partially in a hole formed in jaw bone and through soft tissue belong to the jaw bone. The implant of Group IV is disclose to comprise at least one titanium dioxide layer applied on at least one outer surface of the implant, wherein the layer comprises crystalline titanium dioxide in the anatase phase (page 257, first column, last paragraph). Sul et al. are silent to the anatase phase being in a proportion of 70%-100%. Nonetheless, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the implant of Group IV being at least 70%-100% of anatase phase in order to make experimental comparisons at least between Group IV (anatase) and Group V (mixture of anatase and rutile).

As to claims 3-6, the titanium dioxide layer of Group IV implants is disclosed to be 0.805µm which falls within the claimed range of 0.05 - 10µm; and the implant has a portion that is capable of being placed against the soft tissue. As to claim 7, the crystalline anatase phase in the titanium dioxide layer is inherently a bone stimulation substance since it is disclosed to

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influence bone tissue responses (abstract). As to claims 8-9, it is well known and obvious in the dental implant field that a dental implant would have an outer thread for threading and anchoring into the jawbone and a threadless outer surface such as the head portion of the implant.

Furthermore, it is disclosed that the implant of the experimental groups each has thread (page 255, second line under Table 1). As to claim 10, Sul et al. disclose that the implant of Group IV is coated with anatase and/or a mixture of anatase and rutile crystalline titanium dioxide.

As to claims 14-15, Sul et al. are silent to the titanium dioxide completely assumes the anatase phase, and the portion configured to extend through the soft tissue is coated with layers of crystalline titanium dioxide in the anatase phase along 2/3 of its length. Nonetheless, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the implant of Group IV completely assume anatase phase in order to make experimental comparisons at least between Group IV (anatase) and Group V (mixture of anatase and rutile). Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to layer 2/3 of the portion's length with anatase titanium dioxide since it has been held that (1) discovering an optimum or workable ranges, and/or (2) changing a component's size, involves only routine skill in the art. *See MPEP* §§ 2144.05.

**5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sul et al. in view of Sachdeva et al. (5,697,779).**

Sul et al. fail to disclose the bone stimulation substance comprises BMP (bone morphogenetic protein). Nonetheless, it is well known in the dental implant field to coat a dental implant with osteoinductive factor such as growth factor or bone morphogenetic protein. For example, Sachdeva et al. discloses coating a dental implant with bone morphogenetic protein for osteoinductive purposes (column 7 lines 16-36). It would have been obvious to one having

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ordinary skill in the art at the time the invention was made to modify Sul et al. by including bone morphogenetic protein as bone stimulation substance since it has been held since it has been held to be within the general skill of an artisan to select a known material on the basis of its suitability for the intended use. *In re Leshin*, 125 USPQ 416.

### **Conclusion**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hao D. Mai whose telephone number is (571) 270-3002. The examiner can normally be reached on Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cris Rodriguez can be reached on (571) 272-4964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Hao D Mai/  
Examiner, Art Unit 3732**

**/Cris L. Rodriguez/  
Supervisory Patent Examiner, Art Unit 3732**